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Factors behind sustainability of activities in the post-project period in Matengo highlands in Tanzania

Christopher Mahonge
Sokoine University of Agriculture, Tanzania, cmahonge@gmail.com

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C.P. Mahonge
Sokoine University of Agriculture Centre for Sustainable Rural Development
cmahonge@gmail.com

ABSTRACT: Continuity of project activities by the beneficiary communities after project expiry has been a concern globally. While various efforts have been made by project implementers during the project tenure to ensure post-project sustainability, this challenge has still been persistent. However, evidence exists of situation whereby post-project era has witnessed continued implementation of activities which were established during the project duration. The question comes as to which factors are behind such observed positive scenario? The answer to this question can enhance our understanding on variables that can be used to increase sustainability of development initiative after the planned project tenure. The aim of this study is to determine factors behind sustainability of activities in the post-project duration in the Matengo highlands in Tanzania. A combination of methods were used to collect data including focus group discussion, observation, and time-based activities tracking from project time to a decade after the project tenure. The study results indicated that the observed sustainability could be explained using beneficiary-based and project-based attributes.

I. KEY WORDS

sustainability, environment, development, local people

II. INTRODUCTION

For long time now the process of development has been propelled through development projects. In the past the emphasis was put on top-down approaches whereby it was an outsider making decision on what the insiders had to do and the use of blue prints was dominated (Chambers, 1993). However, at latter years a move was made towards collaborative planning, implementation, monitoring and evaluation after some years of centralized approaches seemingly not yielding the anticipated outcomes. In this latter approach, views and needs of the people are put at the centre of focus (Department for International Development, 1997). The move toward participatory project implementation intends to ensure that local people gain the capacity and

ownership to sustain the project activities after its expiry. However, despite all these efforts, the issue of sustainability has been challenging many development endeavors.

Lack of sustainability has been attributed to various reasons. Among the common ones include short project implementation period (Ali and Bailur, 2007), lack of congruency between project interests and responsibilities of the project (Kimaro and Nhampossa, 2005) and those of intended beneficiaries and inappropriate orientation of the pilot projects (Lucas, 2008; Sanner et al., 2012). However, evidences exist that despite the constraints against sustainability of projects' activities, sustainability has higher chance of occurring when during the project tenure, investment is focused into practices which influence behavioral changes among the target population, and when in response, the potential beneficiaries positively perceive the utility of envisaged behavioral and attitudinal shifts (Hoque et al., 1996).

It is common for project activities to end or decline in the target community just after the project has ended or some few months after its ending (Mamakoa, 2013). As such, there has always been a doubt as to whether project activities can continue when a given project comes to an end. This is not the case in the Matengo highlands, Kindimba and Kitanda villages in particular. In these villages, Sokoine University of Agriculture in collaboration with Kyoto University of Japan and Mbinga District Council implemented a project on sustainable rural development in years 2000 to 2004. A decade after the end of the project saw progression of the activities, which were formerly promoted by the project, at the higher pace, and even the establishment of the new ones. This rationalized the urge for research to find out the reasons for the sustainability and positive multiplier effects and emergence of socio-economic transformation in the Matengo highlands that have been doubling even after 10 years since the end of the project time. This implies the existence of certain factors that contribute positively towards actualization of sustainability. Such factors entail effective institutional arrangement, appropriate monitoring mechanisms, improved technology adoption, effective social and community organization, and appropriate policy context (Harvey and Reed, 2004), ownership in the community and enough capacity and technical support (Mackintosh and Colvin 2003).

From this study lessons will be learned to enhance understanding of various stakeholders including policy and decision makers and practitioners as to the potential attributes that may enhance post-project sustainability of various development initiatives.

This article is organized as follows. First, a theoretical analysis of the concept "sustainability" is given. This section targets at enhancing our understanding as to what this concept entails, and at the closure of the section, delineates the position of the present study in the existing theoretical work on sustainability. Second, the methodological approach of the present study is provided. Third, case studies of the Matengo highland are given whereby a time series activities that have sustained socio-economic and environmental conservation activities is uncovered. Fourth, the analysis of factors behind the observed sustainability will be provided before giving concluding remarks.

III. SUSTAINABILITY : A THEORETICAL INTERPRETATION

The concept of sustainability has been a concern in various debates on initiatives towards people's development including those conducted in policy and academic spheres. There is a general agreement that sustainability as a concept is ambiguous, vague,

liable to arbitrariness, and lacks clarity as to what has to be sustained (Cow, 1992; Christen and Schmidt, 2011; Jabareen, 2008; Mozaffar, 2001, Redclift, 1993; Sachs, 1999; Satterthwaite, 1996). In the present section, some theoretical interpretations of the concept sustainability are elaborated.

WCED (1987) perceives sustainability as primarily entailing three pillars namely *social, economic, and environment*. Based on this view, efforts to improve the quality of life of the people should not be made at the expense of the environment. Congruent with this thinking, is the evolutionary economic theory (Mulder and Van Den Bergh, 2001) that transcends limitation of neo-classical economic theory wherein for the latter, economic development does not give a due attention to the sustainability of the ecology dimension. Thus the evolutionary economic theory advocates for ecologising the economy (Collados and Timpothy, 1999). Another conceptualization of sustainability is based on substantiality of human needs. This conception has been criticized as reducing social actors and processes to static entities while pragmatically what seems to be substantial at one temporal point may not necessarily be so at another temporal point due to various drivers including demographic, technological and economic dynamics. These forces produce effects on both human and natural environment systems, i.e. complex and interdependent systems. In other words, social system is a complex adaptive system which is embedded into another complex dynamic system, the natural environment, and within the two complex systems exist dynamic complex subsystems which constantly experience external and internal stimuli. As such, sustainability goals have to express explicitly mechanisms to cope with influences from a set of dynamic factors (Bossel, 1999).

Sustainability is also seen by some as any human activity that provides for and perpetuates food and other necessities for fulfillment of life to human and other creation (Engel, 1990). Yet, others (Pearce and Turner, 1990; Pearce et al., 1990) view sustainability in terms of constancy of natural capital stock. In this case, natural capital stock is defined as entailing a range of global natural resources including renewable, non-renewable and the capacity this natural capital stock has to absorb pollutants and emissions without compromising their core functionality and thus not placing costs upon the future generations. However, a challenge has been proclaimed as to the ways of measuring the natural capital stock, though the idea of ensuring it sustainability has been appreciated by some (e.g. Collados and Timpothy, 1999). On the contrary, some theorists (e.g. Kohn and Gowdy, 2001) question the logic of constant natural capital stock in the world exposed to permanent changes. For these theorists, there is no universally sustainable natural stock state but sustainability is a principle of life of having a resilient state due to successful adaptation to dynamic external and internal conditions.

Christen and Schmidt (2011) argue that the existing thinking on sustainability is characterized by arbitrariness and intuition and cite some sources of such contradictions as including politics and scientific research, making it difficult to have comprehensive instruments to judge objectively whether (or not) development-based projects are sustainable. Aware of such gaps, Christen and Schmidt suggest for a meta-approach that employs the use of a theoretical framework for understanding the concept *sustainability*. Their interpretation of *sustainability* bases on two principles of the theory of sustainability, that of *social justice* and the other of *integration*. Social justice is operationalised in terms of considering the interests of not only the present generation but also protecting those of the generations to come (intra- and inter-generational justice). Integration principle advocates for an

inseparable link of anthropogenic and ecological dimensions. In other words, human needs can only be sustained when the environment from which those needs are derived is managed in a sustainable way. These theorists then added another theory that, they argue, is useful in understanding the empirical side of sustainability, that operationalize the principles of integration and social justice, *the theory of good* to be sustained. According to this theory, a good will become sustained when there are well established institutional arrangements.

The concept of *sustainability* is logically equated to the phrase concept *sustainable development*. Using this view, some theorists conceptualize sustainable development in relation to a constricted space. Among these theorists is Bossel (1999) who argues that societal development is constrained by various factors, and thus there is a limited space with options and possibility paths where sustainable development can take place. He calls this space the *accessibility space*. Within the space of access, Bossel argues, are found a diverse of constraints both natural and of human nature which translate into diverse solution options in the systems characterized by constant evolution, self-organisation, and adaptive processes. In order to be sustainable, systems should thus be able to adapt in the light of the constraints. As such, understanding of sustainability of any system is not a simple process and therefore a spectrum of indicators are required that can be used to judge anthropogenic actions as to whether they are sustainable or not.

Based on the above summarized theoretical knowledge, sustainability is an ambiguous concept among scholars and theorists but these scholars centre at the core thesis about the tension between economic development and protection of the ecology and urgency towards reconciling the two dimensions, i.e. sustainable development. The present study, nonetheless, does not delve into extending the debate on linkages between ecology and (economic) development dimensions. While contextualization of the concept *sustainability* in the present study borrows from the core thesis provided in the existing theoretical knowledge, this study aims at analyzing the drivers for observed sustainability of ecology and development enhancing practices/activities, after a decade of expiry of a community-based project on sustainable rural development. My operational definition of sustainability thus is delimited onto a set of evidences in terms of continued existence and/or emergence of new practices, goods and services beyond a temporal continuum that marks the project cycle. The use of sustainability concept in the present study is in harmony with that of Russell et al (1995) who defined sustainability as the continued flow of benefit streams after the end of the project funding. However, the present study broadly views benefits from the angle entailing both environmental and socio-economic incentives.

In the coming section, the conceptual framework is presented borrowing from the theoretical interpretation above.

IV. CONCEPTUAL FRAMEWORK

Activities' sustainability is a function of various drivers. A list of such factors may hardly be exhausted but in the present study I give a due focus to the following: ownership of project activities, approach used during the project implementation phase, self-inspiration, institutional arrangements, social cooperativity, monitoring, awareness raising, willingness for change, capacity, competitiveness, visionary leadership, recognition of potential of indigenousness, participation, and knowledge sharing mechanisms, and incentivisation. These factors are clustered into project-based factors and beneficiary-based factors. The former entails the project approach and philosophy (participation or

top-down), mechanisms for capacity enhancement, raising ownership spirit, integration of indigenous resources, and mechanisms for incentivizing the target beneficiaries. Beneficiary-based factors include spontaneous self-inspiration for change, willingness for change, cooperativity/cohesiveness, and good leadership potential, and competitiveness.

During the project implementation cycle there is interaction between locally-based and externally-based actors. The interaction intend primarily at shaping the existing state of use of natural capital stock to generate socio-economic outcomes while ensuring that natural capital stock is exploited rationally not to compromise their capacity to generate such benefits in the future. The attainment of a harmony between socio-economic and ecological interests is influenced by both project-based and beneficiary-based factors. External based players make a good use of project-based attributes to influence beneficiary-based factors to be employed to exert positive input for constructing temporally sustainable practices for the ultimate aim of realization of developmentally and ecologically sound outcomes. As such in the process there is also structural construction (such as devising or revising institutional procedures) which enables carrying forward over an extended temporal span physical construction (e.g. improving the environment through tree planting, and improving livelihood through fish farming activities).

The nature of dynamism experienced in the project tenure is an important function determining the chance for sustainability beyond that tenure. As such, visionary non-local based players always strive at avoiding provision of short term inducements (e.g. handouts) for the aim of forcing participation in the project implementation era. Instead, such players create structural and capacity mechanisms for the local based players to develop the power to generate short-term incentives while targeting towards attaining the long-term ecological-development inducements i.e. without compromising the integrity of the natural capital stock.

This conceptual framework is useful for understanding rationale for the observed sustainability of environment sustaining and development enhancing practices and activities established during the project implementation phase (2000-2004) even a decade after the end of the project.

V. STUDY APPROACH

Various methods were used in this study. The methods entail focus group discussion with project beneficiaries (in Kindimba and Kitanda villages), reflection on the methods used during the project time, observation of what existed at the time of data collection (post project time) vis-à-vis what existed during the project duration, inputs from dialogue between farmers at the study area and visitors from elsewhere, key informants interviews, track of activities during and after the project period. These methods complemented and confirmed one another.

Focus group discussions were held with farmers from Kindimba and Kitanda villages that were involved as pilot villages during the implementation of the project on sustainable rural development which was implemented collaboratively by Sokoine University of Agriculture (Centre for Sustainable Rural Development) and Kyoto University of Japan and Mbinga district council. The aim was to gain the knowledge of these farmers as to what was uncovering post project period. This also entailed determining perception of these respondents as to what they had observed that they think reflects continuity of project activities after the project had ended; the respondents were asked to list those activities at different time intervals.

Reflection of methods used during the project implementation time was another way which was used during the data collection. Using this method, the local people were asked as to how what was taking place at the post project period has borrowed from the past project implementation endeavors and framework. The aim of this method was to judge the contribution of approach used during the project time in what was occurring after the project time. Observation was used as a tool of crosschecking responses received from farmer respondents and key informants. Because the researcher was previously involved in the project which was implemented in years 2000 to 2004, he could know practices and activities which were left in the area after the expiry of the project, and therefore he could observe whether those practices and activities still existed or had ceased.

Key informants interviews were held with village leaders and ward and district officials on their views on what was taking place and what has been transmitted from temporal interval of project implementation to the decadal period of post project time. Also, time-based activity series tracking was done from the end of project time (2004) to the time when this study was conducted (September 2014) to map various activities that had been conducted by and emerging from amongst the community members.

All these collected data were largely qualitative in nature and were thus analyzed through content and thematic analyzes methods. This involved drawing themes, categories and patterns of data, comparison and organization of textual information into various systematic patterns in keeping with the structure of the paper.

VI. ACTIVITY SUSTAINABILITY IN KINDIMBA AND KITANDA VILLAGES

In this section, presentation is made of various activities that have taken place at different time period (years) from the end of the project time (2004) to the time when data collection for this study was conducted (September 2014). Table 1 indicates activities implemented at those various time points during the project tenure and after the expiry of the project.

Looking at Table 1 not only continuity of the activities which were established during the project tenure is observed in the post-project period but also emergence of new activities for both project villages of Kindimba and Kitanda. This is the indication of sustainability of the project activities on the one hand, and on the other creation of new employment opportunities by the local beneficiaries themselves. This is a multiplier and diversification effect that has a broadened socio-economic impact. Some activities such as formation of farmers groups and an organizing committee aim at strengthening the operational framework upon which other activities such as tree planting, fish farming and supply of water to household could be governed.

Table 1 also shows some activities that emerged during post-project period which aim at equipping the local beneficiaries with improved skills on microfinance management (village community banking). This activity, apart from building the capacity of the local people on microfinance management, it serves as source of fund for various socio-economic activities.

Results in Table 1 also show that environmental conservation activities have been mainstreamed into development activities both during and after the project implementation period. Tree planting

Table 1: activities implemented/services provided by Kindimba and Kitanda villages during and after the project time

Year(s)	Activities implemented per Village		Remarks
	Kindimba village	Kitanda village	
2000-2004	1, 2, 3, 4, 5, 6	1,2,3,7	These activities were implemented during the project period
2004-2006	1, 2, 3, 4, 5, 6, 8	1,2,3,7,8	Construction of ward school took place in these villages because they were founders of the idea of establishing community-based schools in their areas
2006-2009	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11	1, 2, 3, 7, 8, 9, 11	Other activities emerged along with those that existed during the project time in the first five years following the expiry of the project
2010-2014	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13	1, 2, 3, 4, 7, 8, 9, 10, 11	Activities that create employment apart from farming activities emerge as offsets from sustainable use of natural resources in ten years after the end of the project

Key for Table 1:

1 = Fish farming
2 = Tree planting
3 = Beekeeping
4 = Hydro-milling
5 = Pasture improvement
6 = Establishment of village organizing committee
7 = Formation of farmer groups
8 = Ward school construction
9 = Establishment of tap water project
10 = Generation of electricity from hydromill and supply to village institutions (schools, dispensary, church and teachers schools)
11 = Establishment of community village banking (VICOBA)
12 = Battery charging micro-project
13 = Welding micro-project for youth

has been undertaken throughout during this time and it is a planned activity on yearly basis. Trees are planted not only for conserving the environment but also for generating income and providing for household wood-based demand such as for cooking and construction purposes. Furthermore, connected to tree planting is the hydromill enterprise. This uses water as its fuel for operation and therefore sensitizes the community on the interdependencies between the environment and socio-economic activities (sustainable development). Importantly, from the hydromill machine, hydro-electricity has been generated such that institutions including primary and secondary schools, dispensary and church as well as teachers' houses have been connected to the power supply. Equally important, from the electricity generated other enterprises have been established including welding and battery charging projects. These create awareness and provide evidence on the beneficial integration of development and ecology dimensions. This revelation is in keeping with the principles advocated by Christen and Schmidt (2011) that sustainable development has to bring about social-justice wherein realization of needs

of the present generation does not compromise realization of the same by the future generations, and that development and ecology dimensions have to be integrated for sustainability to be realized. The results echo the WCED (1981) that emphasizes that efforts to reduce poverty should not occur at the expense of the environment.

Another aspect that can be derived from Table 1 is the sharing of similar post-project activities for the two study villages. For example, it can be shown that while Kindimba village started hydromill project for generation of hydro-electricity during the project time, Kitanda village started this enterprise during the post project period. This indicates that the local people in the study area are dynamic in terms of constantly learning from one another. This is one of the virtues among the Matengo people, that of self-inspiration to achieve. Usually the Matengo people in the study area are hard workers, fast learners and good imitators. This is among the beneficiary-based factors that are important for propelling sustainable development.

VII. FACTORS EXPLAINING THE OBSERVED CONTINUITY

Focus group discussions, key informant interview and observation reveal that the continuity (or not) of project activities in the post project era attributes to various factors including:

- Approach used during project implementation
- Institutional arrangement
- Self-inspiration virtue
- Social-cooperativity/cohesiveness
- Willingness to change
- Capacity building

VII.I APPROACH USED BY THE PROJECT

During sustainable rural development project, which was implemented collaboratively by researchers from Sokoine University of Agriculture (SUA) of Tanzania and Kyoto University of Japan and Mbinga district council, a methodology used to implement the project was called the *SUA-method* (Nsenga et al., 2004). This methodology was named after Sokoine University of Agriculture (SUA). SUA-method is field-based, it puts people participation at the centre, and it advocates for the use of indigenous resources to bring about endogenous development. The method was tested in Mbinga district (Kindimba and Kitanda villages in particular) in efforts to devise an appropriate methodology that could be used to guide the implementation of rural development actions. The salient features of the SUA-method including their brief descriptions are:

i). *Fieldwork as the matter of principle:* SUA-method strongly believes and emphasizes on the field work as an important instrument for a good understanding of the field realities. Thus, it advocates for spending much of the project time with the intended project beneficiaries as a way of understanding their potential, strengths and weakness so that to have a thorough knowledge of the community prior to introducing any interventions. As such, a stage is sought wherein prospective interventions have a higher chance of being compatible with the field realities.

ii). *Potential of indigenousness:* SUA-method regards rural communities as possessing rich wisdom, indigenous technologies and knowledge that have been nurtured and developed over time. Such rich indigenous resources are at the disposal of the outsiders

that plan for the local development. Combined with the technical knowledge system, the local knowledge and resource system has potential to contribute positively towards endogenous sustainable rural development.

iii). Participation: SUA-method puts local people at the centre of decision-making and therefore advocates strongly for the local people's participation from the initial planning stage to the final project evaluation stage. It believes that effective participation enhances ownership of the intervention by the local people. This entails the use of participatory methods such as farmers' exchange, seminars, workshops, and participatory demonstration and trials. Through the use of participatory approaches a commonage regarding understanding of the local realities is reached between project team and target local beneficiaries.

iv). Focal feature of the area: The methods also underscores that every community has a unique characteristic at which its social, economic and environmental issues are oriented. This is called the focal feature of the area. It is the focus point for understanding realities of the area and the potential for indigenousness, and upon which participation of the people is centred. The focal feature has to be identified right at an early stage of project implementation because apart from guiding the understanding of field reality, focal feature is used as a pivotal point at which the societal/ community interests converge.

v). Learning process: SUA-method advocates for participatory and process learning from the outset to the expiry of the project initiative. Both outsiders and insiders are in the process of learning from one another. Strong feedback mechanisms are established so that to learn from project implementation process and provide lessons to the entire project cycle, that is, *learn as you do*. Researchers learn from local traditions and wisdom while the local people learn from external-based wisdom and the learning process provides inputs that enable successful and beneficial blending of local and externally-oriented knowledge and resources.

vi). Process monitoring and evaluation: SUA-method suggests for process monitoring and evaluation. Through this process various means and resources including people and finance as well as pilot actions are monitored and evaluated as the process of implementation continues. Both the researchers (outsiders) and the local people (insiders) take part in the participatory monitoring and evaluation exercise and share their views and observations regarding the progress of the implementation phase. This enhances the power of the local people in problem analysis, decision-making and suggesting feasible solution before it is late.

VII.II INSTITUTIONAL ARRANGEMENT

One of the key factors that have provided the local people in the Matengo highlands with structural governing framework is an effectively laid down institutional arrangement. Various institutions at the studied villages of Matengo highlands are held together by *a hybrid institution* called *Sengu*. Sengu is a local term which symbolizes togetherness, cooperativity and cohesiveness of the society. The

hybrid institution comprises of representation of members from various sections of the community (religious, women, village leadership, and general community) and operates as a framework for organizing and directing the community towards sustainable development. The observed continuity of the project activities including multiplier effect wherein new activities emerge in the post-project time has been significantly contributed by the well established institutional arrangement which is responsive, accountable and adaptive to dynamic social, economic and ecological transformations.

VII.III SELF-INSPIRATION VIRTUE/ WILLINGNESS TO CHANGE

Matengo people possess one unique characteristic, *the urge to succeed*. They are usually good imitators of what takes place in their surroundings and can easily put that into practice. For example, in Kitanda village during the project time one farmer group started fish farming activities. The success of this activity at providing the members with food and income at household level attracted the attention of other villagers forming groups for fish farming to the level that more than 30 fish farming groups were formed in the village. These groups shared not only fish fingerlings but also the knowledge on tree planting to conserve water sources which were a source of water for fish farming. The willingness to change is an important capital that can be invested to bring about sustainable livelihood and environmental conservation activities.

VII.IV SOCIAL-COOPERATIVITY/ COHESIVENESS

Another important community-based attribute existing within the Matengo people is the easy of establishing cooperation. This likely borrows from their potential of indigenousness wherein farmers have been applying informal social networks of helping one another in Matengo pits (ngolo) farming activities. Based on division of labour, a group of men would slash the farm plot and organize the organic matter in lattice style; then, a group of women would follow and prepare the Matengo pits covering with the soil the organized organic matter. That indigenous system has made it easy for the Matengo to come into groups during the project time, as the project built on the potential of indigenousness by using the locally available resources and organizational systems.

VII.V CAPACITY BUILDING

Capacity building was emphasized intensely during the implementation of the project activities in the Matengo highlands. Farmers were involved at each stage from initial preliminary analysis of the situation and planning to the final project evaluation. Through participation and by receiving training at various project times, participants developed skills and knowledge and some became local animators. These then trained others in their community and therefore the project philosophy out-scaled to the wider village community. After the project time, the Matengo people from the project villages have been used to train other farmers outside their villages in the same district, as well as in other regions including Morogoro region, uluguru Mountains in particular. These other farmers have been trained on issues related to sustainable natural resource governance and land use planning for sustainable development.

VIII. CONCLUSION AND RECOMMENDATION

Environmental conserving and socio-economic activities established during the implementation of sustainable rural development project in the Matengo highlands in 2000-2004 appear to be

sustained a decade after the end of the project. Fish farming, hydro-milling, tree planting and beekeeping activities have been continued after the project tenure. New activities have also emerged as offsets of the former activities. Such activities include establishment of microfinance institutions (Village Community Banking), hydro-electricity generation, welding and battery charging. The activities are a reflection of integration of development and ecology dimensions. Sustainability of these activities has appeared to be influenced by the following factors. The approach used that has emphasized on field work as the matter of principle, active participation from the outset, utilization of potential of indigenousness, identification and use of the focal feature of the area as the guiding framework, and emphasize on learning process as well as on process monitoring and evaluation are key features for enhancing ownership and thus sustainability. Other factors include self-inspiration, capacity building, willingness to change, social cohesiveness, and well structured institutional framework.

While presently the activities seem to be sustainable, it is not guaranteed as to what will be the future trends on the interactions between socio-economic development and environmental sustainability. Though there is an indication that more positive outcomes will yield in the future, it is still early to predict that with certainty. Therefore, future studies are recommended to analyze the patterns of interaction between the environment and development from the perspective of sustainability.

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